NCPH
North Carolina Public Health

SCHS Studies

A Special Report Series by the State Center for Health Statistics
1908 Mail Service Center, Raleigh, N.C. 27699-1908
www.schs.state.nc.us/SCHS/

No. 148 **November 2005**

Neighborhood-Level Characteristics as Predictors of Preterm Birth: Examples from Wake County, North Carolina

by

Lynne C. Messer, Paul A. Buescher, Barbara A. Laraia, Jay S. Kaufman

ABSTRACT

Objectives: This study uses recent North Carolina data to demonstrate that multiple factors influence preterm birth risk, and particularly to show the effect of neighborhood context on the incidence of preterm birth. Previous studies have shown that neighborhood environments influence health, even after adjustment for individual characteristics and behaviors.

Methods: Approximately 24,300 1999-2001 singleton live birth records for white non-Hispanic and African American non-Hispanic residents of Wake County, North Carolina were used in the analysis. Addresses from the birth certificates were geo-coded to census tracts and tract-level variables from the 2000 U.S. Census were used as measures of the neighborhood environment. Four neighborhood indexes were created from the census tract measures: neighborhood education, residential stability, neighborhood poverty, and neighborhood deprivation. A random effects multivariate regression model was used to estimate the effect of these neighborhood-level factors on preterm birth, controlling for three individual-level characteristics: maternal age, education, and marital status.

Results: White women residing in a census tract with the lowest level of education had an odds of preterm birth 1.47 times that for white women residing in a census tract with the highest level of education. This relationship was statistically significant at the 95 percent confidence level and independent of the three individual-level risk factors that were controlled in the regression model. Other results showed a significantly higher odds of preterm birth among African Americans who live in neighborhoods with higher poverty levels, and a significantly higher odds of preterm birth among whites who reside in neighborhoods with the highest level of deprivation.

Conclusions: Disadvantaged neighborhoods are associated with a higher odds of preterm birth, even after adjusting for individual risk factors. Neighborhoods are units where interventions can be targeted. Improving women's health through neighborhood interventions can be an effective way to reduce adverse birth outcomes. Structural changes may have a stronger effect on health than programs designed to modify individual behaviors or risk factors.

Note: Paul Buescher works at the State Center for Health Statistics. The other three authors are affiliated with the Carolina Population Center at the University of North Carolina at Chapel Hill. This paper is one product of the collaborative North Carolina Birth Outcomes Project (NC-BOP), funded by the federal Maternal and Child Health Bureau.